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Isotropic phase of nematics in porous media

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Abstract

We study the effect of random porous matrices on the isotropic-nematic phase transition. Sufficiently close to the cleaning temperature, both random field and thermal fluctuations are important as disordering agents. A novel random field fixed point of the renormalization group equation was found that controls the transition from isotropic to the replica symmetric phase. Explicit evaluation of the exponents in d = 6 - ε dimensions yields to a dimensional reduction and three-exponent scaling. © 2005 Pleiades Publishing, Inc.

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